

WHAT IS CLAIMED IS:

1. A low-reflective thin-film substrate comprising a transparent glass substrate having formed thereon by sputtering a thin film made up of at least one kind of Ni, Fe, Co, Mo, W, Ta, and Nb having a minimum reflectivity of 0.5% or lower and an optical density of at least 4 in the visible light region.
2. A low-reflective thin-film substrate of claim 1, wherein the thin film is formed in multilayer on the transparent glass substrate by sputtering a target material containing no chromium component and made up of at least one kind of Ni, Fe, Co, Mo, W, Ta, and Nb.
3. A low-reflective thin-film substrate of claim 1, wherein the thin film is formed by sputtering under a gas atmosphere of at least one kind of an inert gas, an oxygen gas, and a carbon oxide gas in a vacuum film-forming apparatus.
4. A low-reflective thin-film substrate of claim 1, wherein an alloy of at least one kind of Ni, Fe, and Co and at least one kind of Mo, W, Ta, and Nb is used as the target material.
5. A low-reflective thin-film substrate of claim 1, wherein an alloy of at least two kinds of Ni, Fe, and Co is used as the target material.
6. A low-reflective thin-film substrate of claim 2, wherein the target material contains at least one kind of Cu, Ti, Zr, and Sn.
7. A low-reflective thin-film substrate comprising a transparent glass substrate having formed thereon by sputtering an aluminum series thin film having a minimum reflectivity of 0.5% or lower and an average reflectivity of 2% or lower in the visible light region.
8. A low-reflective thin-film substrate of claim 7, wherein the optical density of the aluminum series thin film is at least 4.
9. A low-reflective thin-film substrate of claim 7, wherein the aluminum series thin film is formed on the transparent glass substrate by sputtering of the target material containing no chromium component and made up of aluminum as a main constituent.

10. A low-reflective thin-film substrate of claim 7; wherein the aluminum series thin film is formed in multilayer.
11. A low-reflective thin-film substrate of claim 7, wherein the thin film is formed by sputtering under a gas atmosphere of at least one kind of an inert gas, an oxygen gas, and a carbon oxide gas in a vacuum film-forming apparatus.
12. A low-reflective thin-film substrate comprising a transparent glass substrate having formed thereon by sputtering a thin film having a minimum reflectivity of 0.1% or lower, a maximum reflectivity of 2.0% or lower, and an average reflectivity of 0.3% or lower in the visible light region.
13. A low-reflective thin-film substrate of claim 12, wherein the optical density of the thin film is at least 4.0.
14. A low-reflective thin-film substrate of claim 12, wherein Ta is formed on the transparent glass substrate in multilayer as the thin film by sputtering of a target material.
15. A low-reflective thin-film substrate of claim 12, wherein the thin film is formed by sputtering under a gas atmosphere of at least one kind of an inert gas, an oxygen gas, and a carbon oxide gas in a vacuum film-forming apparatus.
16. A low-reflective thin-film substrate of claim 12, wherein a Ta alloy containing at least one kind of Ni, Fe, Co, W, Nb, Cu, Ti, Zr, and Sn is used as the target material.